



## DEPARTMENT OF LABOR & ECONOMIC GROWTH

### DIRECTOR'S OFFICE

### CONSTRUCTION SAFETY STANDARDS

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(as amended May 31, 1990) (as amended July 8, 1993) **(as amended September 3, 1996)**

This rule takes effect 15 days after filing with the Secretary of State

(By authority conferred on the director of the department of consumer and industry services by sections 19 and 21 of Act No. 154 of the Public Acts of 1974, as amended, and Executive Reorganization Order No. 1996-2, being §§408.1019, 408.1021, and 445.2001 of the Michigan Compiled Laws)

R 408.41127 of the Michigan Administrative Code is effective as of the date of this amendment.

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## PART 11. FIXED AND PORTABLE LADDERS

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#### R 408.41101. Scope.

**Rule 1101.** This part establishes minimum requirements for the construction, care, and training in the use of portable and fixed ladders for construction, alteration, or repair operations.

#### R 408.41102. Rescission.

**Rule 1102.** (1) Part 11 of the construction safety commission standards, being R 408.2101 to R 408.2115 of the Michigan Administrative Code and appearing on pages 4297 to 4301 of the 1967 Annual Supplement to the Code, is rescinded.

(2) Part 12 of the construction safety commission standards, being R 408.2201 to R 408.2205 of the Michigan Administrative Code and appearing on pages 3315 and 3316 of the 1964-1965 Annual Supplement to the Code is rescinded.

#### R 408.41103. Definitions; B to I.

**Rule 1103.** (1) "Brand" means marking by burning with a hot iron.

(2) "Cage," "cage guard," or "basket guard" means an enclosure that is fastened to the side rails of a fixed ladder or to the structure to encircle the climbing space of a ladder for the safety of a climber.

(3) "Cleats" means a ladder's crosspieces of rectangular cross section which are placed on edge and on which a person may step to ascend or descend.

(4) "Double-cleat ladder" means a ladder that is similar to a single-cleat ladder, but is wider and has an additional rail in the center that allows simultaneous 2-way traffic.

(5) "Equivalent" means alternative designs, materials, or methods that will provide an equal or greater degree of safety for employees.

(6) "Extension ladder" means a non-self-supporting portable ladder that is adjustable in length. An extension ladder consists of 2 or more sections traveling in guides or brackets arranged to permit adjustment of the ladder's length. An extension ladder's size is designed by the sum of the lengths of the sections measured along the side rails.

(7) "Extension trestle ladder" means a self-supporting portable ladder which is adjustable in length, which consists of a trestle ladder base and a vertically adjustable single ladder, and which has suitable means for locking the ladders together. The size is designated by the length of the rail of the trestle ladder base.

(8) "Fixed ladder" means a ladder that is permanently attached to a structure, building, or equipment.

(9) "Grab bar" means a handhold that is placed adjacent to, or as an extension above, a ladder for the

purpose of providing access beyond the limits of the ladder.

(10) "Individual rung ladder" means a fixed ladder that has each rung individually attached to a structure, building, or equipment.

#### **R 408.41104. Definitions; J to R.**

**Rule 1104.** (1) "Job-built ladder" means a ladder, other than a manufactured ladder, that is usually built at the jobsite.

(2) "Ladder" means an appliance that usually consists of 2 side rails which are joined at regular intervals by crosspieces which are called steps, rungs, or cleats and on which a person may step to ascend or descend.

(3) "Ladder safety device" means a device, other than a cage or well, that is designed to eliminate or reduce the possibility of accidental falls.

(4) "Lower levels" means those levels to which an employee can fall from a ladder. Such areas include ground levels, floors, ramps, runways, excavations, pits, water, and similar surfaces. The term does not include the surface from which the employee falls.

(5) "Manufactured ladder" means a commercially made ladder.

(6) "Maximum intended load" means the total load of all employees, equipment, tools, materials, transmitted loads, and other loads that are anticipated to be applied to a ladder compartment at any one time.

(7) "Pitch" means the included angle which is between the horizontal and the ladder and which is measured on the opposite side of a ladder from the climbing side.

(8) "Platform ladder" means a self-supporting type of fixed size stepladder that has a platform provided at the working level. The size is determined by the distance along the front rail from the platform to the base of the ladder.

(9) "Portable ladder" means a ladder which is not permanently fixed in place and which may be used at various locations.

(10) "Rail ladder" means a fixed ladder which consists of side rails that are joined at regular intervals by rungs or cleats and which is fastened along its entire length or in sections to a building, structure, or equipment.

(11) "Rungs" means a ladder's crosspieces of circular or oval cross section on which a person may step to ascend or descend.

#### **R 408.41105. Definitions; S to W.**

**Rule 1105.** (1) "Safety feet" means a safety device that is placed on the foot of the side rails of straight, sectional, or extension ladders to reduce the likelihood that the base will slip. Safety feet may be flat pads that are covered with a nonslip material, pointed metal projections, or spur wheels.

(2) "Side-step ladder" means a ladder that requires an employee who is getting off at the top of the ladder to step sideways from the ladder to reach the landing.

(3) "Single-cleat ladder" means a ladder which consists of a pair of parallel side rails that are connected with cleats which are joined to the side rails at regular intervals.

(4) "Single-rail ladder" means a portable ladder that has rungs, cleats, or steps which are mounted on a single rail instead of the normal 2 rails that are used on most other ladders.

(5) "Special-purpose ladder" means a portable ladder that represents either a modification or a combination of

design or construction features in 1 or more of the general purpose types of ladders, as defined in R 408.41103(5) and (6), R 408.41104(6) and (7), and subrules (4) and (9) of this rule, in order to adapt the ladder to special or specific uses.

(6) "Stepladder" means a self-supporting portable ladder which is nonadjustable in length and which has flat steps and a hinged back. A stepladder's size is measured along the front edge of the side rails.

(7) "Steps" means the flat crosspieces of a ladder on which a person may step to ascend or descend.

(8) "Through ladder" means a ladder that requires an employee who is getting off at the top of the ladder to step through the ladder to reach the landing.

(9) "Trestle ladder" means a self-supporting portable ladder which is nonadjustable in length and which consists of 2 sections that are hinged at the top to form equal angles with the base. The size of the ladder is designated by the length of the side rails measured along the front edge.

(10) "Well" means a permanent complete enclosure around a fixed ladder that protects a climber. Proper clearance for a well will give the same protection as a cage.

(11) "Worn" means a reduction of the dimension of a wood or nonwood part by more than 10% of its original size.

#### **R 408.41111. Adoption by reference; certification.**

**Rule 1111.** (1) A manufactured portable wood ladder shall be constructed and maintained as prescribed in the ANSI standard A14.1-1990, which is adopted by reference in this rule and may be inspected at the Lansing office of the department of consumer and industry services. This standard may be purchased at a cost as of the time of adoption of this rule of \$35.00 from the American National Standards Institute, 11 West 42nd Street, New York, New York 10036, or from the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.

(2) A manufactured portable metal ladder shall be constructed and maintained as prescribed in the ANSI standard A14.2-1990, which is adopted by reference in this rule and may be inspected at the Lansing office of the department of consumer and industry services. This standard may be purchased at a cost as of the time of adoption of this rule of \$35.00 from the American National Standards Institute, 11 West 42nd Street, New York, New York 10036, or from the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.

(3) A manufactured portable plastic ladder shall be constructed and maintained as prescribed in the ANSI standard A14.5-1982 and supplement 1985, which is adopted by reference in this rule and may be inspected at the Lansing office of the department of consumer and industry services. This standard may be purchased at a cost as of the time of adoption of this rule of \$24.00 from the American National Standards Institute, 11 West 42<sup>nd</sup> Street, New York, New York 10036, or from the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.

(4) Fixed ladders shall be constructed and maintained as prescribed in the ANSI standard A14.3-1984, which is adopted by reference in this rule and may be inspected at the Lansing office of the department of consumer and

industry services. This standard may be purchased at a cost as of the time of adoption of this rule of \$15.00 from the American National Standards Institute, 11 West 42<sup>nd</sup> Street, New York, New York 10036, or from the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.

(5) Job-made ladders shall be constructed and maintained as prescribed in the ANSI standard A14.4-1979 (R1984), which is adopted by reference in this rule and may be inspected at the Lansing office of the department of consumer and industry services. This standard may be purchased at a cost as of the time of adoption of this rule of \$15.00 from the American National Standards Institute, 11 West 42<sup>nd</sup> Street, New York, New York, 10036, or from the Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.

(6) A manufactured portable ladder shall be branded or have a permanent label permanently affixed by the manufacturer which shows the type of ladder and certifies that it meets the requirements of the appropriate ANSI standard as set out in subrules (1) to (5) of this rule.

#### **R 408.41112. Training requirements.**

**Rule 1112.** (1) The employer shall provide a training program for each employee who uses a ladder. The program shall enable each employee to recognize hazards related to the ladder and shall train each employee in the procedures to be followed to minimize these hazards.

(2) An employer shall ensure that each employee has been trained by a competent person in all of the following areas, as applicable:

- (a) The nature of fall hazards in the work area.
- (b) The correct procedures for erecting, maintaining, and disassembling the fall protection systems to be used.
- (c) The proper construction, use, and placement of, and care in handling, ladders.
- (d) The maximum intended load-carrying capacities of ladders that are used.
- (e) The rules contained in this part.

(3) Retraining shall be provided for each employee as necessary so that the employee maintains the understanding and knowledge acquired through compliance with these rules.

#### **R 408.41113. General requirements.**

**Rule 1113.** (1) A ladder shall be provided at all personnel points of access if there is a break in elevation of 19 inches (48 cm) or more and if a ramp, runway, sloped embankment, stairway, or personnel hoist is not provided.

(2) When a building or structure has only 1 point of access between levels, that point of access shall be kept clear to permit the free passage of employees. When work must be performed or equipment must be used, that restricts the free passage of employees at the point of access, a second point of access shall be provided and used.

(3) When a building or structure has 2 or more points of access between levels, at least 1 point of access shall be kept clear to permit the free passage of employees.

(4) Employers shall provide and install all ladder fall protection systems that are required by this part and shall comply with all other pertinent requirements of this part before employees begin the work that necessitates the

installation and use of ladders and their respective fall protection systems.

(5) Ladder rungs, cleats, and steps shall be parallel, level, and uniformly spaced when a ladder is in position for use.

(6) Rungs, cleats, and steps of portable ladders, except as provided in subrules (7) and (8) of this rule, and fixed ladders shall be spaced not less than 10 inches (25 cm) apart and not more than 14 inches (36 cm) apart, as measured between the center lines of the rungs, cleats, and steps.

(7) Rungs, cleats, and steps of step stools shall be not less than 8 inches (20 cm) apart and not more than 12 inches (31 cm) apart, as measured between center lines of the rungs, cleats, and steps.

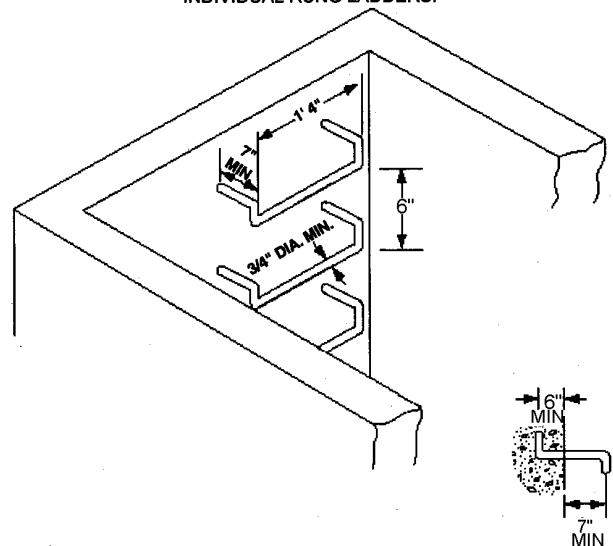
(8) Rungs, cleats, and steps of the base section of extension trestle ladders shall be not less than 8 inches (20 cm), nor more than 18 inches (46 cm), apart, as measured between center lines of the rungs, cleats, and steps. The rung spacing on the extension section of the extension trestle ladder shall be not less than 6 inches (15 cm), nor more than 12 inches (31 cm), as measured between center lines of the rungs, cleats, and steps.

(9) The minimum clear distance between the sides of individual rung-type stepladders and the minimum clear distance between the side rails of other fixed ladders shall be 16 inches (41 cm).

(10) The minimum clear distance between side rails for all portable ladders shall be 11 1/2 inches (29 cm).

(11) The rungs of individual rung-type stepladders shall be shaped so that an employee's feet cannot slide off the end of the rungs, see figure 1.

**FIGURE 1**  
**SUGGESTED DESIGN FOR RUNGS ON**  
**INDIVIDUAL RUNG LADDERS.**



(12) The rungs and steps of fixed metal ladders that are manufactured after January 14, 1991, shall be corrugated, knurled, dimpled, coated with skid-resistant material, or otherwise treated to minimize slipping.

(13) The rungs of steps of portable metal ladders shall be corrugated, knurled, dimpled, coated with skid-resistant material, or otherwise treated to minimize slipping.

(14) Except when portable ladders are used to gain access to fixed ladders, such as ladders on utility towers, billboards, and other structures where the bottom of the fixed ladder is elevated to limit access, when 2 or more separate ladders are used to reach an elevated work area, the ladder shall be offset with a platform or landing between the ladders.

(15) Ladder components shall be surfaced in a manner that prevents employee injury due to punctures or lacerations and prevents the snagging of clothing.

**R 408.41115. Ladder loads; clearances; safety devices; cages; wells; extensions.**

**Rule 1115.** (1) Ladders shall be capable of supporting the following loads without failure:

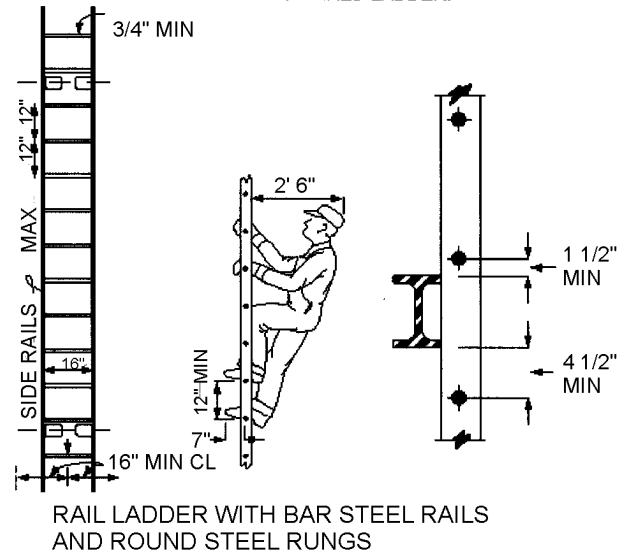
- (a) For each self-supporting portable ladder, not less than 4 times the maximum intended load, except that each extra heavy-duty type IA metal or plastic ladder shall sustain not less than 3.3 times the maximum intended load. The ability of a ladder to sustain the loads indicated in this subdivision shall be determined by applying or transmitting the requisite load to the ladder in a downward vertical direction.
- (b) For each portable ladder that is not self-supporting, not less than 4 times the maximum intended load, except that each extra heavy-duty type IA metal or plastic ladder shall sustain not less than 3.3 times the maximum intended load. The ability of a ladder to sustain the loads indicated in this subdivision shall be determined by applying or transmitting the requisite load to the ladder in a downward vertical direction when the ladder is placed at an angle of 75 1/2 degrees from the horizontal.
- (c) For each fixed ladder, not less than 2 loads of 250 pounds (114 kg) each, concentrated between any 2 consecutive attachments (the number and position of additional concentrated loads of 250 pounds (114 kg) each, determined from the anticipated usage of the ladder, shall also be included), plus anticipated loads caused by ice buildup, winds, rigging, and impact loads that result from the use of ladder safety devices. Each step or rung shall be capable of supporting a single concentrated load of not less than 250 pounds (114 kg) applied in the middle of the step or rung.

(2) The minimum perpendicular clearance between fixed ladder rungs, cleats, and steps and any obstruction behind the ladder shall be 7 inches (18 cm), except in the case of an elevator pit ladder, for which a minimum perpendicular clearance of 4 1/2 inches (11 cm) is required.

(3) The minimum perpendicular clearance between the center line of fixed ladder rungs, cleats, and steps and any obstruction on the climbing side of the ladder shall be 30 inches (76 cm), except as provided in subrule (4) of this rule.

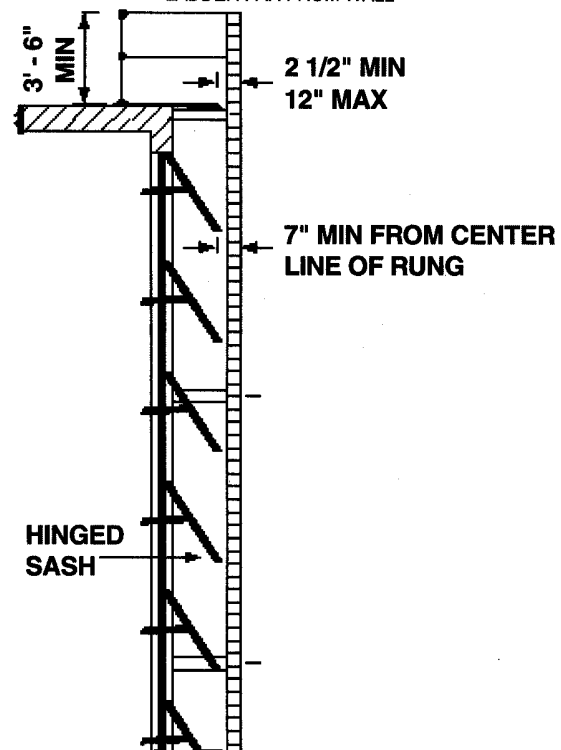
(4) When unavoidable obstructions are encountered, the minimum perpendicular clearance between the center line of fixed ladder rungs, cleats, and steps and the obstruction on the climbing side of the ladder may be reduced to 24 inches (61 cm), if a deflection device is installed to guide employees around the obstruction. See figure 2.

**FIGURE 2**  
CLEARANCE FOR UNAVOIDABLE OBSTRUCTION  
AT REAR OF FIXED LADDER.



(5) Through fixed ladders, at their point of access or egress, shall have a step across distance of not less than 7 inches (18 cm) nor more than 12 inches (30 cm), as measured from the center line of the steps or rungs to the nearest edge of the landing area. If the normal stepacross distance is more than 12 inches (30 cm), a landing platform shall be provided to reduce the distance to the specified limit. See figure 3.

**FIGURE 3**  
LADDER FAR FROM WALL



(6) Fixed ladders that do not have cages or wells shall have a clear width to the nearest permanent object of not less than 15 inches (38 cm) on each side of the center line of the ladder.

(7) Fixed ladders shall be provided with cages, wells, ladder safety devices, or self-retracting lifelines where the length of climb is less than 24 feet (7.3 m), but the top of the ladder is at a distance that is more than 24 feet (7.3 m) above lower levels.

(8) Where the total length of a climb equals or is more than 24 feet (7.3 m), fixed ladders shall be equipped with 1 of the following:

- (a) Ladder safety devices.
- (b) Rest platforms at intervals of not more than 150 feet (45.7 m) and self-retracting lifelines.
- (c) Multiple ladder sections and a cage or well. Each ladder section shall not be more than 50 feet (15.2 m) in length. Ladder sections shall be offset from adjacent sections, and landing platforms shall be provided at maximum intervals of 50 feet (15.2 m).

(9) Cages for fixed ladders shall be in compliance with all of the following provisions:

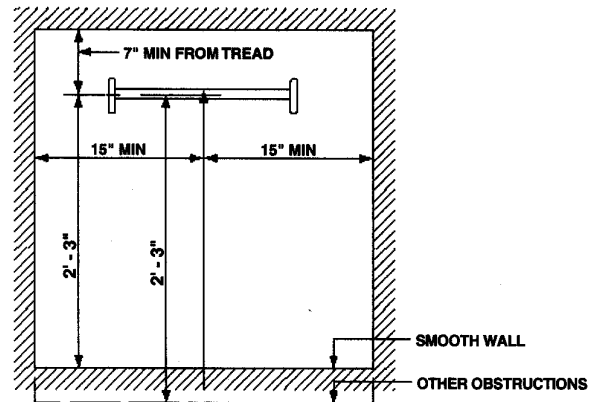
- (a) Horizontal bands shall be fastened to the side rails of rail ladders or for individual rung ladders, directly to the structure, building, or equipment.
- (b) Vertical bars shall be on the inside of the horizontal bands and shall be fastened to them.
- (c) Cages shall extend not less than 27 inches (68 cm), and not more than 30 inches (76 cm) from the center line of the step or rung, excluding the flare at the bottom of the cage, and shall not be less than 27 inches (68 cm) in width.
- (d) The inside of the cage shall be clear of projections.
- (e) Horizontal bands shall be spaced not more than 4 feet (1.2 m) on center vertically;
- (f) Vertical bars shall be spaced at intervals of not more than 9 1/2 inches (24 cm) on center horizontally.
- (g) The bottom of the cage shall be at a level that is not less than 7 feet (2.1 m) and not more than 8 feet (2.4 m) above the point of access to the bottom of the ladder. The bottom of the cage shall be flared not less than 4 inches (10 cm) all around within the distance between the bottom horizontal band and the next higher band.
- (h) The top of the cage shall be not less than 42 inches (1.2 m) above the top of the platform or the point of access at the top of the ladder and shall provide for access to the platform or other point of access.

(10) A well for a fixed ladder shall be in compliance with all of the following provisions:

- (a) The well shall completely encircle the ladder.
- (b) The well shall be free of projections.
- (c) The well's inside face on the climbing side of the ladder shall extend not less than 27 inches (68 cm) and not more than 30 inches (76 cm) from the center line of the step or rung.
- (d) The inside clear width of the well shall be not less than 30 inches (76 cm).
- (e) The bottom of the wall on the access side of the well shall start at a level that is not less than 7 feet (2.1 m) and not more than 8 feet (2.4 m)

above the point of access to the bottom of the ladder. See figure 4.

**FIGURE 4**  
CLEARANCE DIAGRAM FOR FIXED LADDER IN WELL



(11) Ladder safety devices and related support systems for fixed ladders shall be in compliance with all of the following provisions:

- (a) The devices and support systems shall be capable of withstanding, without failure, a drop test that consists of an 18-inch (41 cm) drop of a 500-pound (226 kg) weight.
- (b) The devices and support systems shall permit the employee who uses the device to ascend or descend without continually having to hold, push, or pull any part of the device, thereby leaving both hands free for climbing.
- (c) The devices and support systems shall be activated within 2 feet (.61 m) after a fall occurs and shall limit the descending velocity of an employee to 7 feet per second (2.1 m/sec.) or less.
- (d) The connection between the carrier or lifeline and the point of attachment to the body belt or harness shall not be more than 9 inches (23 cm) in length.

(12) The mounting of ladder safety devices for fixed ladders shall be in compliance with all of the following provisions:

- (a) To provide the strength necessary to stop an employee's fall, mountings for rigid carriers shall be attached at each end of the carrier and intermediate mountings, as necessary, shall be spaced along the entire length of the carrier.
- (b) Mountings for flexible carriers shall be attached at each end of the carrier. When the system is exposed to wind, cable guides for flexible carriers shall be installed at a minimum spacing of not less than 25 feet (7.6 m) and not more than 40 feet (12.2 m) along the entire length of the carrier in a manner that will prevent wind damage to the system.
- (c) The design and installation of mountings and cable guides shall not reduce the design strength of the ladder.

(13) The side rails of through or side-step fixed ladders shall extend 42 inches (1.1 m) above the top of the access level or landing platform served by the ladder. For a parapet ladder, the access level shall be the roof if the

parapet is cut to permit passage through the parapet; however, if the parapet is continuous, the access level shall be the top of the parapet.

(14) For through fixed ladder extensions, the steps or rungs shall be omitted from the extension and the extension of the side rails shall be flared to provide not less than 24 inches (61 cm) and not more than 30 inches (76 cm) of clearance between side rails. Where ladder safety devices are provided, the maximum clearance between side rails of the extensions shall not be more than 36 inches (91 cm).

(15) For side-step fixed ladders, the side rails and the steps or rungs shall be continuous in the extension.

(16) Individual rung ladders and stepladders, except for ladders that are used where their access openings are covered with manhole covers or hatches, shall extend not less than 42 inches (1.1 m) above an access level or landing platform either by the continuation of the rung spacings as horizontal grab bars or by providing vertical grab bars that shall have the same lateral spacing as the vertical legs of the rungs.

#### **R 408.41121. Inspection; faults and defects.**

**Rule 1121.** (1) A ladder, as prescribed in this part, shall be used to provide safe access to all elevations, unless other means, such as steps, stairs, ramps, runways, or elevators, are provided.

(2) A ladder shall be inspected before use and after it has fallen or been involved in an accident to determine its condition.

(3) A ladder that has any of the following faults and defects shall be immediately tagged “**DANGEROUS – DO NOT USE**” and shall be withdrawn from service:

- (a) Broken, worn, or missing rungs, cleats, or steps.
- (b) Broken or split side rails.
- (c) Broken or bent guides or iron spreaders.
- (d) Broken or bent locks.

The tag shall be as prescribed in rules 2241 and 2242 of Part 22. Signals, Signs, Tags and Barricades, being R 408.42241 and R 408.42242 of the Michigan Administrative Code.

(4) Fixed ladders that have structural defects, such as broken or split rails or corroded components, shall be withdrawn from service until repaired. The requirement to withdraw a defective ladder from service is satisfied if 1 of the following provisions is complied with:

- (a) The ladder is immediately tagged with the words “do not use” or similar language.
- (b) The ladder is marked in a manner that readily identifies it as defective.
- (c) The ladder is blocked, such as with a plywood attachment that spans several rungs.

(5) Ladder repairs shall restore the ladder to a condition that meets its original design criteria before the ladder is returned to use.

#### **R 408.41122. Use generally.**

**Rule 1122.** (1) A ladder shall not be placed in a passageway, doorway, driveway, or any location where it may be displaced, unless it is protected by barricades or guards or is secured to prevent displacement.

(2) A ladder shall be placed on a substantial and stable base unless it is secured to prevent accidental displacement. The area around the top and bottom of the ladder shall be kept clear.

(3) A ladder shall not be used as a brace, slide, guy, gin pole, or gangway or for any other use than that for which it is designed.

(4) An employee shall face the ladder when ascending or descending. Each employee shall use at least 1 hand to grasp the ladder when progressing up or down the ladder. An employee shall not carry any object or load that could cause the employee to lose balance and fall.

(5) An employee who is on a ladder shall not overreach or do any pushing or pulling that may cause the ladder to move or topple. If both of an employee's shoulders are outside of a side rail, the employee is overreaching.

(6) A manufactured portable ladder or a single-cleat ladder shall not be used by more than 1 employee at a time.

(7) A ladder shall be located and maintained to prevent an employee from bumping into, or snagging onto, projecting objects while ascending or descending the ladder.

(8) If a ladder provides the only means of access to, or egress from, a working area for 25 or more employees, or if simultaneous 2-way traffic is expected, a minimum of 2 ladders or a job-built, double-cleat ladder shall be provided.

(9) A rope or chain ladder shall not be used on a construction site.

(10) A ladder shall not be loaded beyond its loadcarrying capacity.

(11) A ladder shall not be moved, shifted, or extended while occupied by an employee.

(12) Single-rail ladders shall not be used.

#### **R 408.41123. Classification of ladders.**

**Rule 1123.** The use of all manufactured portable ladders or stepladders shall be limited to those classified as type IA or type I, as prescribed in ANSI A14.1-1990, which is adopted by reference in this rule and may be inspected at the Lansing office of the department of consumer and industry services. This standard may be purchased from the American National Standards Institute, 11 West 42<sup>nd</sup> Street, New York, New York, 10036, or from the Safety Standards Division, Michigan Department of Consumer and Industry Services 7150 Harris Drive, Box 30643, Lansing, Michigan 48909, at a cost as of the time of adoption of this rule of \$35.00.

#### **R 408.41124. Portable ladders.**

**Rule 1124.** (1) A portable ladder shall be used at such a pitch that the horizontal projected distance from the top support to the base is not more than 1/4 of the vertical distance between these points.

(2) A portable ladder in use shall be equipped with appropriate safety feet, unless the ladder is tied, blocked, or otherwise secured to prevent it from being displaced. Slip-resistant feet shall not be used as a substitute for care in placing, lashing, or holding a ladder that is used upon slippery surfaces, including flat metal or concrete surfaces that are constructed so that they cannot be prevented from becoming slippery.

(3) A portable ladder that is used at such a pitch that the horizontal projected distance from the top support to the base is less than 1/5 of the vertical distance between these points shall be secured at the top to prevent tipping backward.

(4) A portable ladder that is used at a pitch of 80 degrees or more shall be in compliance with the requirements of a fixed ladder as prescribed in R 408.10335 of the Michigan Administrative Code.

(5) When portable ladders are used for access to an upper landing surface, the ladder side rails shall extend not less than 3 feet (.9 m) above the upper landing surface to which the ladder is used to gain access; or, when such an extension is not possible because of the ladder's length, then the ladder shall be secured at its top to rigid support that will not deflect and a grasping device, such as a grabrail, shall be provided to assist employees in mounting and dismounting the ladder. The side rails shall not extend in a manner that would permit ladder deflection under a load, by itself, to cause the ladder to slip off its support. The top of a non-self-supporting ladder shall be placed with the 2 rails supported equally, unless the ladder is equipped with a single support attachment.

(6) A manufactured portable metal ladder shall not be used for electrical work or where the ladder or an employee may contact electrical conductors. A ladder shall have nonconductive siderails if the ladder is used where the employee or the ladder could contact exposed energized electrical equipment.

(7) A metal ladder shall not be used or moved unless a minimum of 20 feet is maintained between power transmission or distribution lines.

(8) A power transmission or distribution line or electrical apparatus shall be considered energized unless the property owner or utility indicates it is de-energized and the line or apparatus is visibly grounded. Where de-energizing is impractical, the minimum clearances set forth in table 1 shall be maintained between the ladder, employee, or material, whichever is closer.

(9) Table 1 reads as follows:

**TABLE 1**

VOLTAGE	MINIMUM CLEARANCE
To 50 kV	10 feet
Over 50 kV	10 feet plus .4 inch per kV

(10) A manufactured portable ladder shall not be more than the following lengths:

TYPE	MAXIMUM LENGTH
Single-section ladder (Type 1A or 1)	30 feet
Extension ladder (Type 1A or 1)	60 feet
Trestle ladder or extension sections or base sections of an extension trestle ladder	20 feet

(11) An employee who is using a portable ladder shall not stand on the top 2 rungs or within 3 feet of the top of the ladder.

(12) Two portable ladders shall not be spliced together to provide long sections unless such ladders are specifically designed for such use.

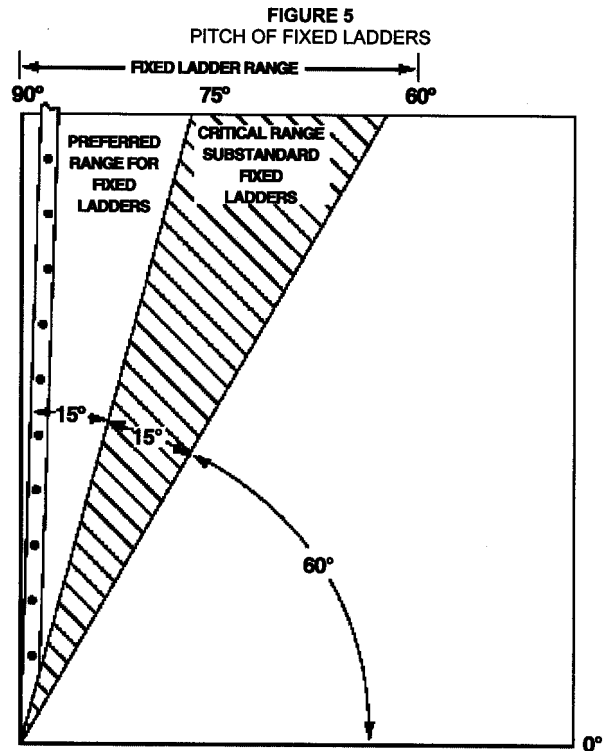
(13) A portable extension ladder shall be adjusted only from the ground, floor, or the lower section of the ladder.

(14) A portable 2-section extension ladder shall be erected so that the top section rests on the base section. The top section shall be the section nearest to the climber.

(15) A non-self-supporting ladder shall be used at an angle such that the horizontal distance from the top

support to the foot of the ladder is approximately 1/4 of the working length of the ladder that is the distance along the ladder between the foot and the top support.

(16) A fixed ladder shall be used at a pitch of not more than 90 degrees from the horizontal, as measured to the back side of the ladder. See figure 5.



#### **R 408.41125. Trestle ladders.**

**Rule 1125.** (1) When trestle ladders are used to support an elevated work platform, the entire system shall be considered a scaffold.

(2) An employee shall not work directly from the vertical portion of an extension trestle ladder.

(3) Rungs, cleats, and steps of the base section of extension trestle ladders shall be not less than 8 inches (20 cm) and not more than 18 inches (46 cm) apart, as measured between center lines of the rungs, cleats, and steps. The rung spacing on the extension section of the extension trestle ladder shall be not less than 6 inches (15 cm) and not more than 12 inches (31 cm).

#### **R 408.41126. Use of stepladders.**

**Rule 1126.** (1) An employee shall not use the backside of a stepladder for climbing, unless the stepladder is designed for such use.

(2) Unless the stepladder is equipped with a handrail, the top step and cap shall not be used to stand on.

(3) A stepladder shall not be used as a straight ladder by leaning it against a wall or other support.

(4) A metal spreader or locking device shall be provided on each stepladder to hold the front and back sections in an open position when the ladder is being used. The ladder shall be opened fully and the spreaders shall be locked while in use.

(5) Each leg of a step ladder shall be in contact with solid footing.

(6) A portable metal stepladder shall not be used for electrical work or where the ladder or an employee may contact electrical conductors.

(7) A portable stepladder shall be in compliance with the provisions of R 408.41121(2) to (5), R 408.41122(1) to (7), (9), and (10), and R 408.41130(1) to (4).

**R 408.41127. Single and double-cleat ladders generally.**

**Rule 1127.** (1) A job-built ladder shall not be more than 24 feet in length. If the length of a required job-built ladder would be more than the maximum length, 2 or more separate ladders shall be used and shall be offset with a platform between each ladder that is not supported by the ladders. Ladders used with a platform shall be secured at the top and bottom.

(2) The platform shall be designed to support 4 times the intended load. Guardrails and toeboards, as prescribed in Part 45. Fall Protection, being R 408.44501 et seq. of the Michigan Administrative Code, shall be erected on the exposed sides of the platform. Rails shall extend above the top landing at least 36 inches but not more than 42 inches to provide a handhold for mounting and dismounting, and cleats shall be eliminated above the landing level. When 2 or more separate job-built ladders are used with a platform, the ladders shall be completely offset from each other and the minimum horizontal distance between adjacent side rails shall be 6 inches.

(3) Side rails of a job-built ladder shall be continuous.

(4) Each cleat of a job-built ladder shall be a continuous member.

(5) A wood cleat shall be not less than nominal 1-inch by 4-inch construction grade lumber for a cleat less than 20 inches in length and not less than nominal 2-inch by 4-inch construction grade lumber for a cleat from 20 inches to 50 inches in length. Knot-free lumber shall be used for cleats.

(6) The cleats shall be uniformly spaced 12 inches top to top. A cleat shall be attached to the narrow face of each side rail using 2 10-d nails for nominal 1-inch by 4-inch cleats or 2 16-d nails for 2-inch by 4-inch cleats.

(7) Filler blocks shall be used on the rails between cleats. Filler blocks of the same thickness as the cleats shall be inserted between cleats and butted tightly against the underside of each cleat.

(8) Side rails shall not be cut into to house cleats.

**R 408.41128. Single-cleat ladders; width; side rails.**

**Rule 1128.** (1) The width of a single-cleat ladder shall be not less than 16 inches or more than 20 inches between rails. Side rails shall be parallel.

(2) Side rails of a single-cleat ladder shall be not less than nominal 2-inch by 4-inch construction grade lumber for ladders less than 16 feet in length and not less than nominal 2-inch by 6-inch construction grade lumber for ladders from 16 feet to 24 feet in length.

**R 408.41129. Double-cleat ladders; width; additional rail; side rails.**

**Rule 1129.** (1) The width between outside rails of a double-cleat ladder shall be not less than 38 inches or more than 46 inches.

(2) A double-cleat ladder shall have an additional rail located at the center of the ladder.

(3) The side rails and middle rail for a double-cleat ladder shall be not less than nominal 2-inch by 4-inch

construction grade lumber for double cleat ladders less than 12 feet in length and not less than nominal 2-inch by 6-inch construction grade lumber for a double cleat ladder from 12 feet to 24 feet in length.

(4) The side rails of a double-cleat ladder shall be secured at the bottom and as close as possible to the top to prevent moving or toppling.

**R 408.41130. Storage of ladders.**

**Rule 1130.** (1) A ladder should be stored in such a manner as to provide ease of access and inspection. A ladder stored in a horizontal position shall be supported at a sufficient number of points to prevent the ladder from sagging during storage.

(2) A wood ladder shall not be stored within 6 feet of a radiator, stove, or steam pipe or in a location subject to excessive heat or dampness.

(3) A metal ladder shall not be stored where it is subject to reaction with corrosive substances like acids and alkali solutions.

(4) A plastic ladder shall be stored on edge on racks when not in use and in a location which is free of corrosive substances and which provides protection from adverse environmental conditions.

**R 408.41131. Handling and transporting of ladders.**

**Rule 1131.** (1) A ladder shall be handled with reasonable care and not be subjected to deliberate dropping or to misuse.

(2) A ladder which is transported on a vehicle shall be secured to prevent it from catapulting or falling from the vehicle.

**R 408.41132. Maintenance.**

**Rule 1132.** (1) A ladder shall be maintained free of slip-enhancing hazards and in good working condition.

(2) A ladder shall not be painted with an opaque material. A ladder, particularly one used out-of-doors should be coated with a suitable transparent protective material to retard splintering caused by weathering.

(3) The side rails and legs of a ladder shall be kept free from splinters. The joint between the side rail and step shall be kept tight and metal hardware and fittings secured.

(4) The locks, pulleys, spreader joints, or other movable metal parts of a ladder shall operate freely without undue play. Lubricants shall be applied as needed.

(5) A rope used on a ladder shall not have a long or loosely twisted lay, shall be free of burns and cuts, and shall not show evidence of weakness resulting from fraying, wear, mildew, or rot. Rope ends shall be fastened or whipped.

(6) A ladder surface shall be free of puncture or laceration hazards.

**R 408.41133. Special-purpose ladders.**

**Rule 1133.** (1) A special-purpose ladder may be capable of being used as a step ladder, a single or extension ladder, or a trestle ladder.

(2) A special-purpose ladder, when used as any of the types of ladders listed in subrule (1) of this rule, shall meet the requirements of the applicable rules of this part.

(3) A special-purpose ladder may be used by more than 1 employee if specifically designed for that purpose.



(4) A platform step ladder shall be constructed in accordance with requirements for a type 1 step ladder. A platform of a platform ladder shall be capable of supporting a load of 200 pounds placed at any point on the platform.

**R 408.41140. Fixed ladders.**

**Rule 1140.** A fixed ladder shall be as prescribed in Part 3. Fixed ladders, being R 408.10301 et seq. of the

Michigan Administrative Code. This standard may be inspected at or purchased from the Safety Standards Division, Michigan Department of Consumer and Industry Services, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.



Michigan Occupational Safety and Health Administration  
PO Box 30643  
Lansing, Michigan 48909-8143  
Ph: 517.322.1814  
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